
Instruction manual

LED CARVER



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1. CE- declaration of conformity



The manufacturer:

BPR Swiss GmbH
Dental Mobility
Dorfstrasse 10
CH-3673 Linden
www.bpr-swiss.com

declares in sole responsibility that the subsequent product:

Designation:

LED CARVER

conforms with following European guidelines and national requirements: 2006/42/EG
(machinery directive).

Technical documentation can be obtained from:

BPR Swiss GmbH
Dental Mobility
Dorfstrasse 10
CH-3673 Linden
www.bpr-swiss.com

Linden den 24.06.2010

A handwritten signature in black ink, appearing to read "M. Maurer".

Marcel Maurer, CTO

2. Symbols and signs used in the manual

Danger



Sections marked with this symbol contain instructions which must absolutely be followed to avoid damage to the LED CARVER, as well as injury to operator or patient.

Instructions



These instructions are to be precisely followed so as not to damage the LED CARVER.

Prohibition



These procedures should absolutely be refrained from so as not to damage the LED CARVER.

Recommendations



Recommendations that should be followed to allow optimal use of LED CARVER.

3. Safety precautions

Work not described in the instruction manual must be carried out by qualified personnel.



During maintenance (for example replacement of parts not mentioned in the instruction manual) the safety of the device may be at risk.

4. Description of the LED CARVER

4.1. Description

The compact, stainless steel LED Carver is a laboratory turbine equipped with a high-power LED light.

The LED Carver has a spray function that can be switched on and off. It can be used to spray a combination of air and water onto the surface that is being treated to cool it. Cooling a surface while working on it has a positive effect on the lifespan of many materials.

The spray can be switched on and off at will via a unique switch on the tool holder.

The spray can be fine-tuned using the two controllers on the station

Thanks to a novel use of LED technology, the LED Carver has an intense light quality and a unique shadow-free light field.

The LED lighting can be switched on and off via a switch on the station.

The light can be adjusted to the required intensity by means of a variable brightness function. The maximum light intensity lies at 45'000 Lux!

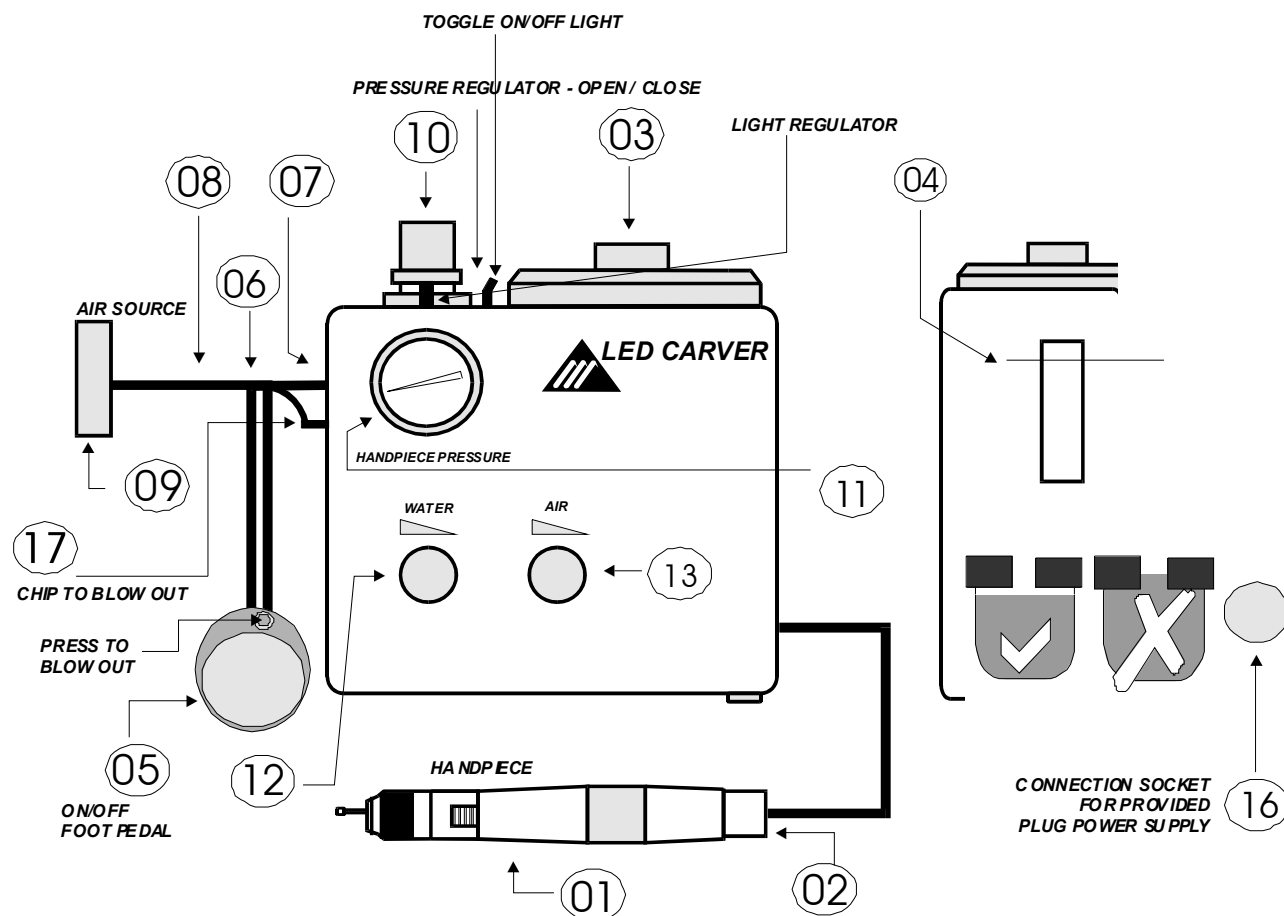
The incomparably high torque allows surfaces to be manipulated at a very high grinding pressure.

A unique functionality allows the spray to be switched on and off via a switch on the tool holder.

4.2. Components

- Base unit with filter, pressure regulator and manometer
- Water container, two spray regulators, ON/OFF toggle switch for light and light regulator
- Foot control
- Handpiece with rotor

5. Start-up



1. Screw turbine / handpiece (N° 01) onto handpiece hose (N° 02).
2. Open the water tank cap (N° 03), fill spray water container (N° 04) with (if possible) distilled water and close water tank cap.

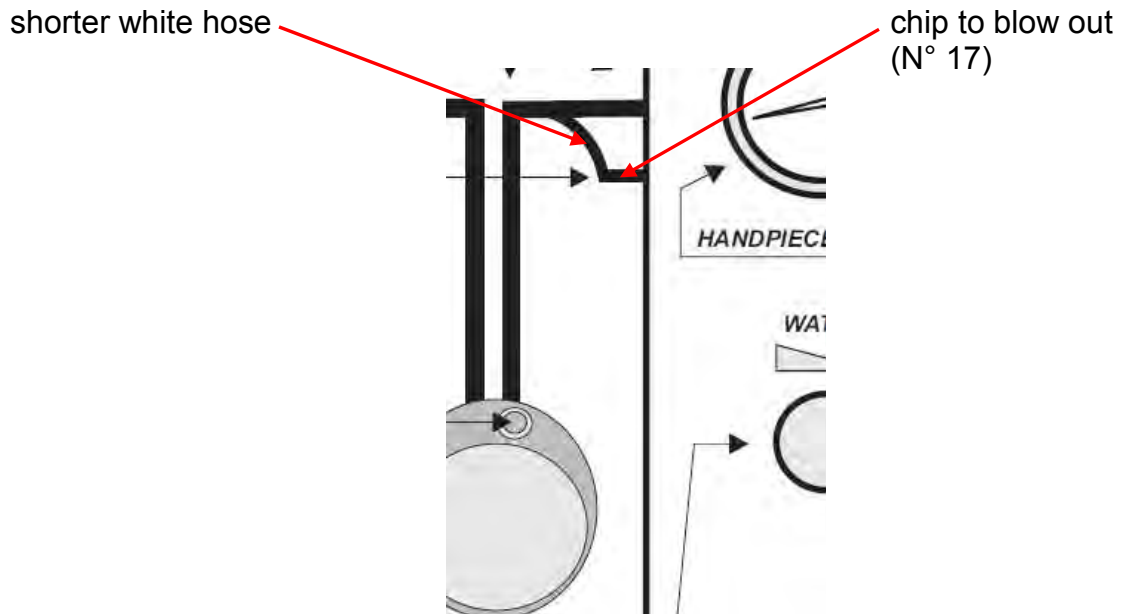


Do not overfill the spray water container! Check the water level at the control slot on the back of the unit (N° 04).

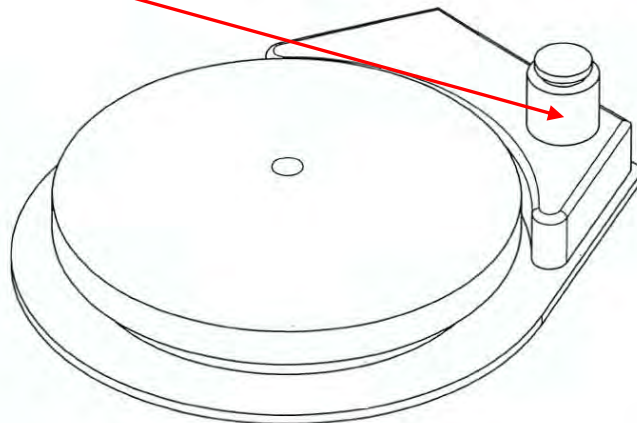
3. Push the longer white hose with the blue ring of the foot control (N° 06) into the connection located on the side of the unit (N° 07).

Then push the grey hose of the foot control (N° 08) into the connection of your compressed air supply / air source (N° 09).

At last push the shorter white hose without blue ring of the foot control into the chip to blow out (N° 17) (according to the following technical drawing).



To blow out press the button on the foot pedal.



The inlet pressure on the LED CARVER must not be more than 8 bar!



Make sure that only dry and clean air is used! The compressor has to be cleaned regularly.

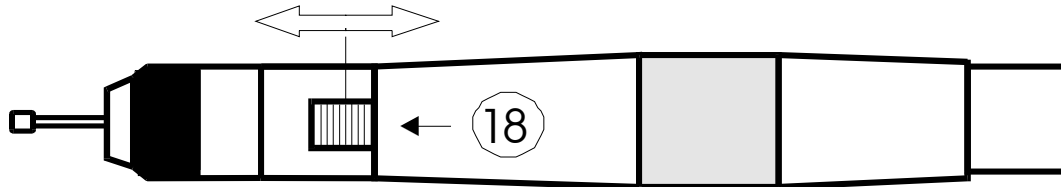
- The turbine / handpiece (N° 01) pressure is regulated by pressing the foot control (N° 05) and turn the pressure regulator (N° 10) clockwise until manometer / pressure gauge (N° 11) indicates 2.8 bar (40.4 psi).



The maximum pressure indication must not be more than 3.2 bar (46.5 psi)!

6. Operation

6.1. Operation of spray water



1. Slide on the left position (see figure, N° 18): Spray is switched ON.
2. Slide on the right position (see figure, N° 18): Spray is switched OFF.
3. Press the foot pedal to adjust the fine adjustment with the buttons air and water. Spray is adjusted by turning air (N° 13) and water (N° 12) buttons on the front case of the unit.
4. The LED lighting can be switched on and off via a toggle switch on the station (N° 14).

position toggle switch in the back: light is always on

position toggle switch in the middle: no light

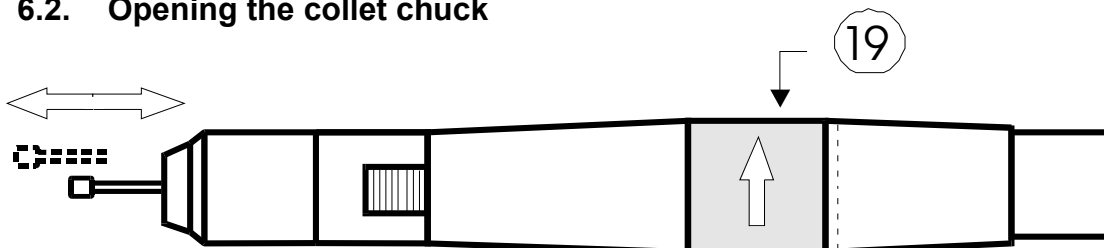
position toggle switch in the front: light is only on when actuating foot pedal

The light can be adjusted to the required intensity by means of a light regulator (N° 15).



The foot pedal must be actuated to adjust the fine adjustment of the spray!

6.2. Opening the collet chuck

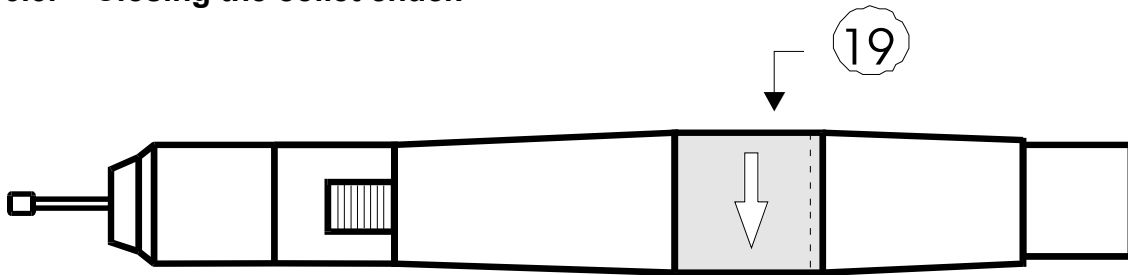


Turn the collet chuck / lock ring (N° 19) in the direction of the arrow until limit stop (ON).



Make sure that the collet chuck is fully closed before the turbine is used!

6.3. Closing the collet chuck



Turn the collet chuck / lock ring (N° 19) in the direction of the arrow until limit stop (OFF).



Turn gently to limit stop. Do not apply force!

6.4. Filling up spray water

1. Open the water tank cap (N° 03).
2. Fill the spray water container (N° 04) with (if possible) distilled water.
3. Close the water tank cap (N° 03).
- 4.



Make sure that manometer / pressure gauge (N° 11) indicates 0 bar before refilling the spray water container and that the foot control (N° 05) is not actuated.

6.5. Adjustment of instrument pressure

The turbine / handpiece (N° 01) pressure is regulated by pressing the foot control (N° 05) and turn the pressure regulator (N° 10) clockwise until manometer / pressure gauge (N° 11) indicates 2.8 bar (40.4 psi).



The maximum pressure indication must not be more than 3.2 bar (46.5 psi)!

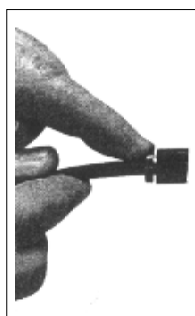
6.6. Connection of the foot control

Connection:

Push the longer white hose with the blue ring of the foot control (N° 06) into the connection located on the side of the unit (N° 07).

Then push the grey hose of the foot control (N° 08) into the connection of your compressed air supply / air source (N° 09).

At last push the shorter white hose without blue ring of the foot control into the chip to blow out (N° 17) (according to the following technical drawing).

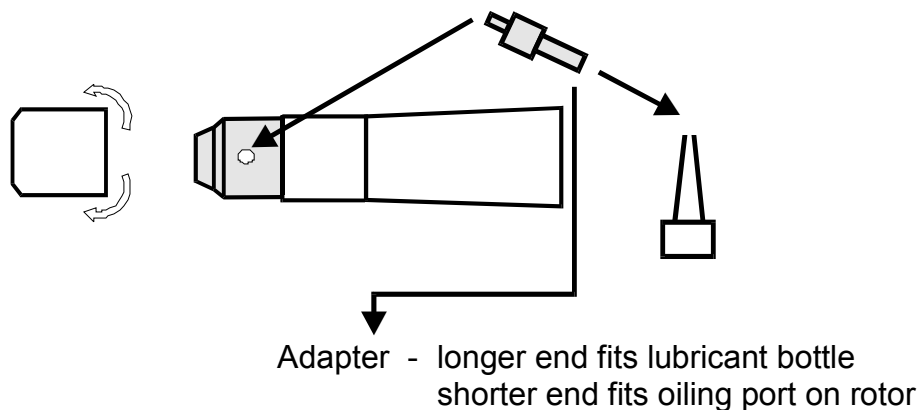


Disconnection: Push against the black ring on the connection.

Simultaneously pull hose off the connection.

7. Maintenance and cleaning

7.1. Lubrication of the rotor



Lubricate the rotor daily by putting 1 - 2 drops of oil into the port shown in the figure.

1. Unscrew the nut of the rotor
2. Turn the handpiece until the port becomes visible (handpiece horizontal)
3. Insert 1 - 2 drops of oil into the port
4. Screw the nut of the rotor onto the handpiece

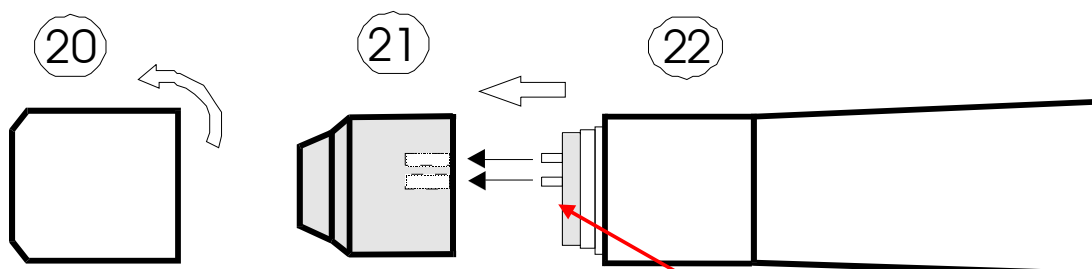


Keep the oiling port clean!



Never clean the rotor with compressed air, it can damage the bearings!

7.2. Changing the rotor



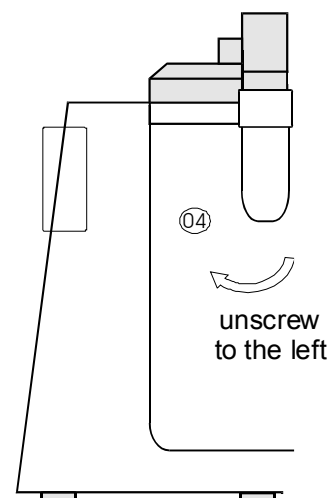
1. Unscrew the nut of the rotor (N° 20)
2. Pull the rotor (N° 21) off the turbine body (N° 22).
3. Exchange the rotor (N° 21) and insert onto the spray water tips by pushing the nut of the rotor (N° 20) over the rotor and screw tightly.



Never clean the rotor with compressed air, it can damage the bearings!

7.3. Cleaning of the spray water container

1. Loose the screws at the rear side of the LED CARVER and remove the back casing of the unit.
2. Unscrew to the left and remove the spray water container (N° 04) according to the figure.



7.4. Cleaning the LED CARVER



A soft cloth and detergent must be used to clean the outer casing. The detergent should preferably contain disinfectant.



Abrasive detergents may not be used for cleaning the treatment unit.

8. Technical data

Weight	4.1 kg
Dimensions	200 x 150 x 190 cm
Speed	300.000 r.p.m.
Operated by	Compressed air
Operating pressure	2.8 - 3.2 bar
Air consumption	40 l/min.
Water container	350 ml
Chuck diameter	1.6 mm
Lubrication	Manual
Max. light strength	45'000 Lux
Colour temperature	5'000 Kelvin (daylight quality)
Compressed air hose (grey)	6 x 4 mm

9. Correcting malfunctions and servicing

9.1. Correcting malfunctions

Malfunction	Possible cause	Remedy
Device does not work	Black hose is not connected to the air supply / air source	Connect the black hose to the air supply / air source
Device does not work	Black hose with the blue ring is not connected with the unit	Connect the black hose with the blue ring with the unit of the LED CARVER
Spray does not work	Spray water tank is empty	Fill spray water tank
Bur can not be fixed, although the collet chuck is closed	The shaft of the used bur is deficient	Check the shaft of the used bur: \varnothing 1,60 mm +0.00 / -0,01mm tolerance. If diameter is not correct, change the bur

9.2. Service

If problems occur with this product which cannot be resolved using the correction of malfunctions table or if a fault occurs, contact your service point or the manufacturer at following contact address:

Manufacturer service point

BPR Swiss GmbH
Dental Mobility
Dorfstrasse 10
CH-3673 Linden
0041 31 506 06 06
www.bpr-swiss.com
service@bpr-swiss.com

9.3. Spare parts

Following an overview of the spare parts available for LED CARVER:

Artikelnummer	Bezeichnung
L-9023	Handpiece with rotor LED
L-9033	Rotor with spray and light
L-9002	Foot control
L-9003	Oil and adapter
L-9006	Handpiece hose with connection

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